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Cacumisporium fusiforme sp. nov. from Jiangxi, China

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Abstract—A new species, *Cacumisporium fusiforme*, is described and illustrated from a specimen collected on dead branches of an unidentified broadleaf tree in Jiangxi, China. The fungus differs from other described *Cacumisporium* species in its conidial shape and size. A key to *Cacumisporium* species is provided.

Key words—asexual fungi, hyphomycetes, saprobes, taxonomy

Introduction

Cacumisporium Preuss, was established by Preuss (1851) for a single species *C. tenebrosum* Preuss. The genus is diagnosed by differentiated, unbranched, septate conidiophores and solitary, acropleurogenous, euseptate, pigmented conidia that secede schizolytically from polyblastic, integrated, terminal, flattened or inconspicuous denticulate conidiogenous cells after several holoblastic sympodial elongations on enteroblastic percurrent regenerated portions of the conidiophores (Goos 1969, Tsui & al. 2001, Castañeda-Ruíz & al. 2007a,b, Wongsawas & al. 2009, Seifert & al. 2011). Saccardo

(1877) recombined *C. tenebrosum* as *Acrothecium tenebrosum* (Preuss) Sacc., but *Acrothecium* is now treated as an unaccepted genus based on an unidentifiable type (Hughes 1958, Seifert & al. 2011). In modern literature, *Cacumisporium tenebrosum* is treated as a junior synonym of *C. capitulatum* (Corda) S. Hughes [≡ *Helminthosporium capitulatum* Corda; ≡ *Acrothecium capitulatum* (Corda) Ferraris] (Mangenot 1953, Hughes 1958, Sutton 1973, Seifert & al. 2011). Eight other species have been published in *Cacumisporium* (Mercado-Sierra & Castañeda-Ruíz 1987, Castañeda-Ruíz & Kendrick 1991, Kirk 1992, Tsui & al. 2001, Castañeda-Ruíz & al. 2007a,b, Wongsawas & al. 2009, Rambelli & Raimondo 2014). However, "*C. oceanicum*" Rambelli is invalid (Index Fungorum 2018), and *C. curvularioides* R.F. Castañeda & W.B. Kendr. has been synonymised with *C. pleuroconidiophorum* (Davydkina & Melnik) R.F. Castañeda & al. (Castañeda-Ruíz & al. 2007a), leaving *Cacumisporium* currently with seven valid taxa. The criteria used to delimit species are based primarily on conidial shape, size, septation, and pigmentation (Kirk 1992; Tsui & al. 2001; Castañeda-Ruíz & al. 2007a,b; Wongsawas & al. 2009). A key to *Cacumisporium* species was provided by Castañeda-Ruíz & al. (2007b).

The forests of Jiangxi have a rich fungal diversity, and many anamorphic fungi have been discovered there (Ma & Zhang 2015, Ma & al. 2016, Xu & al. 2017). During an ongoing mycological survey in these forests, an interesting hyphomycete with morphological features of *Cacumisporium* was collected on dead branches. It was found to be distinct from previously described taxa and is therefore proposed as new to science. The specimens are conserved in the Herbarium of the Department of Plant Pathology, Jiangxi Agricultural University, Nanchang, China (HJAUP).

Cacumisporium fusiforme Z.H. Xu, Jian Ma, X.G. Zhang & R.F. Castañeda, **sp. nov.** Fig. 1

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Differs from *Cacumisporium sigmoideum* by its smaller, 3(–4)-euseptate, fusiform conidia with a rounded apex.

Type: China, Jiangxi Province, Jiulianshan National Nature Reserve, on dead branches of an unidentified broadleaf tree, 3 November 2014, J. Ma (**Holotype**, HJAUP M0307).

Etymology: refers to the fusiform conidial shape.

Colonies on the natural substratum effuse, hairy, brown to dark brown. Mycelium partly superficial, partly immersed, composed of branched, septate, smooth, subhyaline to pale brown hyphae. Conidiophores macronematous,

Fig. 1. *Cacumisporium fusiforme* (holotype, HJAUP M0307).
A–C. Conidiophores, conidiogenous cells, and conidia; D. Conidia.

mononematous, simple, erect, straight or flexuous, smooth, septate, cylindrical, often with 1–2 enteroblastic percurrent extensions, dark brown at the base, pale brown or subhyaline at the apex, 73–185 × 4–7 μm. Conidiogenous cells polyblastic, integrated, terminal, sympodial elongated, with flattened or inconspicuous denticles at the conidiogenous loci, brown, pale brown to subhyaline, 35–61.5 × 5.5–6.5 μm. Conidial secession schizolytic. Conidia solitary, acrogenous, fusiform, occasionally curved, 3(–4)-euseptate, end cells subhyaline or pale brown to pale yellow, middle cells yellow-brown, smooth, 23.5–33.5 × 7.5–9 μm, apex rounded, base truncate, 2–2.5 μm wide, accumulating in brown, somewhat mucilaginous masses.

Comments –Among *Cacumisporium* species, *C. fusiforme* is most similar to *C. sigmoideum* Mercado & R.F. Castañeda, which is distinguished by its falcate, mostly sigmoid, 3-euseptate, larger (26–41 × 7.6–10.2 μm) conidia with an acute apex (Mercado-Sierra & Castañeda-Ruíz 1987).

Key to *Cacumisporium* species

1. Conidia 1-euseptate, versicolorous, ovoid, 18–26 × 11–16 µm ..... *C. uniseptatum*
1. Conidia 3(–4)- or 7-euseptate, botuliform, fusiform, obturbinate, sigmoid, obovoid to broadly ellipsoid 2
2. Conidia 7-euseptate, narrowly ellipsoid to somewhat fusiform, 26–32 × (3–)4(–5) µm ... *C. spooneri*
2. Conidia 3(–4)-euseptate 3
3. Conidia rugose to verrucose, obovoid to broadly ellipsoid, 28–35 × 14–20 µm ..... *C. rugosum*
3. Conidia smooth 4
4. Conidia botuliform, 16–22 × 4.5–5 µm ..... *C. capitulatum*
4. Conidia obturbinate, sigmoid or fusiform, at least 6 µm diam. 5
5. Conidia concolorous, broad fusiform, sometimes navicular or somewhat ellipsoid, 12–17 × 6–8 µm ..... *C. tropicale*
5. Conidia versicolor 6
6. Conidia with one swollen cell strongly pigmented, 18–28 × 8–9 µm ..... *C. pleuroconidiophorum*
6. Conidia with two cells strongly pigmented 7
7. Conidia fusiform, 23.5–33.5 × 7.5–9 µm, 3(–4)-euseptate, with a rounded apex ..... *C. fusiforme*
7. Conidia falcate, mostly sigmoid, 26–41 × 7.6–10.2 µm, 3-euseptate, with an acute apex ..... *C. sigmoideum*

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